Air, Water, and Ecosystem Quality Monitoring and Forecasting: Combining Forces for Better Results

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EPA has greatly expanded its participation in and projects related to the Global Earth Observation System of Systems (GEOSS). Earth Observation refers to the study of the environment through remote sensing and *in situ* measuring instruments. The GEOSS vision reflects a global scientific and political consensus that the assessment of the state of the earth requires continuous and coordinated observation. EPA's Office of Research and Development (ORD) is assisting with these observations by monitoring air, water, and ecosystems through its Advanced Monitoring Initiative (AMI). This poster highlights several efforts that use innovative means to help us understand the factors affecting human health and the environment and allow us to make better decisions:

- An Integrated Water Quality Monitoring and Algal Bloom Advisory and Decision Support System for Coastal and Estuarine Systems
  Ross Lunetta, Hans Paerl
- Bi-National Expansion of the Harmful Algal Blooms Observing System
  William Fisher, Melanie Magee
- Clean Air Interstate Rule (CAIR) Accountability Assessment: An Integrated Model-Measurement Approach to Assess Synoptic-Scale Transport of Sulfates and Aerosols
  Fred Dimmick, Rich Scheffe
- Delivering Public Health Relevant Air Quality Estimates to Improve Local Information for Public Health Tracking Programs (PHASE)
  Fred Dimmick, Janet Burke, James Hemby
- Modeling Fused Spatial Data for Improved Public Information on Air Quality
  David Holland, Jim Szykman
- Morphological Database and Web Portal Access for Advanced Urban Atmospheric and Dispersion Modeling (UADM)
  Jason Ching, David J. Williams
- Pacific Coast Ecosystem Information System (PCEIS): From Description to Prediction
  Henry Lee II, Deborah Reusser

- Proposal for an AIRNow Gateway System That Will Provide Real-Time Data to the Scientific, Research, and Educational Communities to Improve Forecasting and Public Health Protection
  Phil Dickerson, John White

All projects provide tools to support research and decision-making focusing on air, water, and ecosystems quality. The work includes collecting environmental data, combining data sets, running models, analyzing and interpreting data, and making the results available to the public. A key to several of these projects is the ability to forecast conditions that can reduce public exposure to harmful events.

EPA's GEOSS efforts encourage collaboration. To this end, a number of AMI projects, including several of those mentioned above, are involved in the Remote Sensing Information Gateway, a project that will enable EPA scientists to obtain a wide variety of data from other Agencies. The project is implementing a data server system with a Web-based interface that will provide quick and easy access to Modis satellite data from NASA and meteorology data from NOAA.

These projects are innovative in that they provide a variety of models, data sets, and methods of subsetting, combining, and evaluating the data. Much of the work incorporates high-performance computing techniques and capabilities that were not available a year or two ago.

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